at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v0)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{50}$ $\sqrt{18}$ $\sqrt{27}$

$\sqrt{5 \cdot 5 \cdot 2}$ $\sqrt{3 \cdot 3 \cdot 2}$ $\sqrt{3 \cdot 3 \cdot 3}$

$5\sqrt{2}$ $3\sqrt{2}$ $3\sqrt{3}$

Question 2

Find all solutions to the equation below:

$$\frac{(x+8)^2}{2} + 6 = 56$$

First, subtract 6 from both sides.

$$\frac{(x+8)^2}{2} = 50$$

Then, multiply both sides by 2.

$$(x+8)^2 = 100$$

Undo the squaring. Remember the plus-minus symbol.

$$x + 8 = \pm 10$$

Subtract 8 from both sides.

$$x = -8 \pm 10$$

So the two solutions are $x = 2$ and $x = -18$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 + 12x = 45$$

Take the linear coefficient, 12, halve it and square the result. You should get 36. Add this to both sides of the equation to complete the square.

$$x^2 + 12x + 36 = 45 + 36$$

$$x^2 + 12x + 36 = 81$$

Factor the perfect-square trinomial.

$$(x + 6)^2 = 81$$

$$x + 6 = \pm 9$$

$$x = -6 \pm 9$$

$$x = 3 \quad \text{or} \quad x = -15$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 5x^2 - 30x + 39$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 5 .

$$y = 5(x^2 - 6x) + 39$$

We want a perfect square. Halve -6 and square the result to get 9 . Add and subtract that value inside the parentheses.

$$y = 5(x^2 - 6x + 9 - 9) + 39$$

Factor the perfect-square trinomial.

$$y = 5((x - 3)^2 - 9) + 39$$

Distribute the 5.

$$y = 5(x - 3)^2 - 45 + 39$$

Combine the constants to get **vertex form**:

$$y = 5(x - 3)^2 - 6$$

The vertex is at point $(3, -6)$.